

SPACE ACT AGREEMENT AMENDMENT FIVE
BETWEEN
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND
ORBITAL SCIENCES CORPORATION
FOR
COMMERCIAL ORBITAL TRANSPORTATION SERVICES DEMONSTRATION (COTS)

PURPOSE AND AGENCY COMMITMENT

The purpose of this Amendment is to modify Space Act Agreement NNNJ08TA32S to add an additional Milestone to lead the way towards a potential additional test launch of the Orbital Sciences Taurus II launch vehicle prior to the system demonstration mission to the International Space Station. A Taurus II maiden test launch would reduce risks associated with the development of a new launch vehicle and increase the chance of success of the system demonstration mission with the Orbital Sciences Cygnus spacecraft.

In accordance with ARTICLE 5 - FINANCIAL OBLIGATIONS of the Space Act Agreement, the Government's liability to make payments to ORBITAL is limited to only those funds obligated annually under this Agreement or by amendment to this Agreement, and NASA may obligate funds to this Agreement incrementally. Therefore, the Parties agree there is no commitment or obligation to conduct an additional test launch of the Taurus II launch vehicle.

Appendix 2 is amended to add the following:

<p>Milestone 22: Initial MCR for Taurus II Maiden Test Flight</p> <p>Orbital shall conduct an initial Mission Concept Review (MCR) for the Taurus II maiden test flight in accordance with Appendix 3.</p> <p>Success Criteria: Successful completion of the MCR in accordance with the criteria defined in Appendix 3.</p>	<p>Amount: \$20,000,000 Date: December 2010</p>
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Appendix 3 is amended to add the following:

Mission Concept Review (MCR). Applicable to Appendix 2 Milestone 22

- a) The MCR affirms the mission need and examines the proposed mission's objectives and the concept for meeting those objectives.

Table 3-4 - MCR Entrance and Success Criteria

Mission Concept Review	
Entrance Criteria	Success Criteria
<ol style="list-style-type: none">1. Mission goals and objectives.2. Concept of operations.3. Preliminary risk assessment, including technologies and associated risk management/mitigation strategies and options.4. Conceptual test and evaluation strategy.5. Preliminary technical plans to achieve next phase.	<ol style="list-style-type: none">1. Mission objectives are clearly defined and stated and are unambiguous and internally consistent.2. The preliminary set of requirements satisfactorily provides a system that will meet the mission objectives.3. The mission is feasible. A solution has been identified that is technically feasible. Risk and mitigation strategies have been identified and are acceptable based on technical risk assessments.4. The cost and schedule estimates are credible.5. Technical planning is sufficient to proceed to the next phase.

ARTICLE 28. SIGNATURE BLOCK

The terms and conditions of this Space Act Agreement, as modified by this Amendment are hereby incorporated herein.

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION

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Douglas R. Cooke
Associate Administrator,
Exploration Systems Mission Directorate

DATE: 12/14/2010

ORBITAL SCIENCES CORPORATION

BY: Antonio L. Elias
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DATE: 12 NOV 2010